**MEMORANDUM**

**To:** Board of Regents

**From:** Board Office

**Subject:** Post-Audit Report – University of Iowa

**Date:** May 10, 2004

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**Recommended Actions:**

1. Receive the Bachelor of Science in Applied Physics Post-Audit Report from the University of Iowa.

2. Approve continuation of the Bachelor of Science in Applied Physics Program. Continue to monitor the program's measures of success; direct the University to submit a report in three years.

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**Executive Summary:**

Regent Policy

Regent policy requires that a post-audit report be prepared for each new program five years after initial approval by the Board to: (1) assess its progress during the five-year time period; and (2) ensure that the program is meeting original expectations.

The Regent post-audit process requires institutions to respond to a series of questions outlined in the Policy Manual §6.07. Institutions must begin to collect information when the program is approved by the Board of Regents and during each succeeding year in order to make the post-audit report accurate and informative.

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Responses to Regent Questions

The responses to the Regent questions on post-audits are included on pages 5-9 and indicate to what extent the program has met its originally stated purpose, the accuracy of enrollment estimates, employment patterns, and accuracy of expenditure projections for faculty, staff, and equipment.

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Post-Audit Report Review

The post-audit report has been reviewed by the Board Office and the Interinstitutional Committee on Educational Coordination (ICEC) and is recommended for approval.

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**Link to Strategic Plan:**

This report addresses the following Objectives and Strategies in the Board's Strategic Plan:

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| Objective 1.1 | Offer high-quality programs through ongoing program improvement for undergraduate, graduate, professional, and non-degree students and special school students. |
| Strategy 1.1.1 | Utilize continuing quality improvement processes for all academic programs. |
| Objective 2.1 | Support and increase research, scholarship, and creative activities at the Regent institutions to serve the needs of Iowa and its citizens. |
| Strategy 2.1.1 | Continue efforts to increase the quantity and quality of research, scholarship, and creative activities. |

**Analysis:**

This program, implemented in 1999, is intended primarily for students interested in a broad program of study in physics combined with a significant concentration of courses in an applied field that has immediate application to industry. The degree offers four areas of concentration – optics, solid-state electronics, computer science, and medical physics – and provides a foundation for a wide range of employment opportunities in high technology industries.

Program Characteristics

- This program is available at Iowa State University and the University of Northern Iowa. ISU's program currently enrolls 2 undergraduate majors. UNI's program currently enrolls 5 undergraduate majors.
- The current enrollment at the University of Iowa is four undergraduate majors[1]; the enrollment is projected to increase to six undergraduate majors during the next three years.
  - The program did not realize its original enrollment projection of 40 undergraduate majors each year by the fifth year.
- There have been three graduates of the program since 1999; all of the graduates enrolled in graduate or professional school.
- There has been approximately $7,000 of increased expenditures as a result of adopting this program.
- Approximately .10 FTE faculty is assigned to this program.

[1] The Department of Physics and Astronomy recently indicated that, as a result of active recruiting, the current program enrollment has risen to seven.

**Measures of Success Indicated by the University**

The University responded to the Board's request for measures of success with the following points:

- The program will be a major success if the number of majors increases to 10 or more in the next three years.
- The program is worth maintaining if there are at least five majors because the necessary courses will be taught regardless, the cost is minimal, and the benefit to the student of having a degree in Applied Physics outweighs the minimal costs.

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**Additional Comments Submitted by the University**

The University submitted the following additional comments regarding the Applied Physics Program:

- The original estimate of 40 undergraduate majors each year is not correct.
- The program has averaged between three and seven majors each year.
- Maintaining the major does not produce significant increases in cost. The 10% faculty time budgeted for this program results from a reallocation of one-half of the faculty member's service commitment of 20% to serve as coordinator of the program.
- There are no additional courses in physics as a result of this program.
- The extra courses for this program come from other disciplines, e.g., engineering and computer science.
- This major is one of five majors available in the departments – B.A. in Physics, B.A. in Astronomy, B.S. in Physics, and B.S. in Astronomy.
- Currently, there are approximately 80 majors in the department.
- Approximately 50% of the students majoring in Applied Physics come from the pool of physics majors. That pool is not expected to increase substantially in the next three years. The remaining 50% of the students majoring in Applied Physics come from other disciplines who choose a double major.
- The Applied Physics degree provides additional educational options to existing students at no new cost to the department. Elimination of the program would disrupt student plans and would not result in significant cost savings.
- The program allows students to add applied physics as a second major; to seek employment in a laboratory/industry setting upon graduation; or to attend graduate or medical school.

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| Non-Majors | There are no courses explicitly for Applied Physics. Therefore, there are no non-majors specifically in Applied Physics. Applied Physics majors take general physics courses with all other physics majors. They also take either a concentration of additional existing specialty physics courses or they take existing courses on specialized topics from other departments. |
| Viable Program | A review of the post-audit report indicates that the program appears to meet the Board's criteria for post-audit review (see Attachment, pgs. 5-9) and should continue. However, the University should continue to monitor its measures of success and submit a report in three years. |

Diana Gonzalez

Approved: Gregory S. Nichols

dg/h/postaudit/May04/24d.doc

**6.07 Post-Audit of New or Expanded Programs:**

**BACHELOR OF SCIENCE IN APPLIED PHYSICS**

**1. Is this program now available in other Regent universities or in other colleges and universities in Iowa?**

Since we initiated the program, Iowa State has developed an Applied Physics degree. Our understanding is that they currently have only 4-5 majors in the program. UNI has a program that predates ours, and roughly half their majors are in Applied Physics. We believe this reflects both the overall emphasis of UNI's Department and the career aspirations of their students. The status of our program would be more reasonably compared to that at ISU.

**2. List actual headcount enrollments and credit hours generated by majors and separately for all others in this program for the last five years and estimate these items for the next three years.**

A total of 9 students have been enrolled in the program.

| | Actual | | | | Estimated | | | |
|---|---|---|---|---|---|---|---|---|
| | Year One | Year Two | Year Three | Year Four | Current Year | Next Year | Sec Year | Third Year |
| | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 |
| **Undergraduate** | | | | | | | | |
| Majors | 0 | 3 | 4 | 4 | 4[2] | 4 | 6 | 6 |
| Nonmajors | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Graduate** | | | | | | | | |
| Majors | NA | NA | NA | NA | NA | NA | NA | NA |
| Nonmajors | NA | NA | NA | NA | NA | NA | NA | NA |

[2] Addendum submitted by the University on March 30, 2004: Between the time this report was submitted and when it was docketed, the Department of Physics and Astronomy has been actively recruiting new students to the program resulting in a current enrollment of seven.

The enrollment in the Applied Physics program has not yet met the estimates in the original proposal for the degree. In response to this, we have implemented strategies to try to strengthen the program, e.g., developing an improved website and appointing a faculty Director to oversee the program. The new Director has already defined a new pre-med track for the program, is developing modifications to make the available tracks more appealing to students, and is planning approaches for more effectively marketing the degree. We will also be discussing marketing strategies for the degree with our Advisory Board, as the Advisory Board Chair remains an enthusiastic supporter of the degree.

**How many dropouts of this program can be identified over the last five years? What reasons were given for leaving the program?**

Two students have dropped out of the program. Both of these students changed their major.

**3. What have been the employment (placement) experiences of any graduates of this program?**

All graduates have enrolled in graduate or professional school.

**a. How many students have graduated (completed) this program (by year)?**

| | Year One | Year Two | Year Three | Year Four | Current Year | Next Year | Sec Year | Third Year |
|---|---|---|---|---|---|---|---|---|
| | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 |
| Undergraduate | 0 | 1 | 0 | 2 | 0 | 0 | | |

**b. What has been the success rate for graduates with respect to certification and/or licensure, if applicable?**

Not applicable.

**c. How many undergraduate completers of the program have been accepted into graduate study programs?**

Three. The fact that the graduates from our Applied Physics program have gone on to professional and graduate programs is largely an indication of the high quality of the handful of students who have chosen this degree option. It is clear that, so far, the original stated goal of the program, i.e., to provide B.S. physics students with a pathway into industry, has not yet materialized, but we believe it is still too early to predict whether this goal is unreachable. It is important to realize that we are just beginning to come out of a multi-year slump in high-tech hiring. Also, within the Department, we have begun to place more emphasis on the success of this program. We hope to have more time to continue the development of this degree option. This degree may be particularly important as we continue to nurture connections with the College of Education, as the

Applied Physics degree may provide a natural route for us to develop a 5-year B.S. (Physics)/MAT program with Education.

**d. What has been the success rate for obtaining jobs for graduates of the program: 1) in the field or a related field: 2) in non-related fields? 3) unemployed?**

Not applicable, all graduates enrolled in graduate or professional school.

**e. What has been the success rate for obtaining the preferred first job in the field by graduates of the program?**

Not applicable, all graduates enrolled in graduate or professional school.

**4. Has this program been fully accredited? If not, why, and when is such accreditation anticipated?**

Not applicable. There is no accreditation program for applied physics degrees.

**5. Outline the current FTE staffing of the program and estimate future staffing needs for the next three years.**

**Current Staffing**

- Applied Physics Coordinator – 10% Effort
- Student Records Clerk – 1 % Effort

**Future Staffing**

- Applied Physics Coordinator – 10% Effort
- Student Records Clerk – 1% Effort
- UNIX System Administrator – 1 % Effort

| | Actual | | | | Estimated | | | |
|---|---|---|---|---|---|---|---|---|
| | Year One | Year Two | Year Three | Year Four | Current Year | Next Year | Sec Year | Third Year |
| | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 |
| Faculty | .05 | .05 | .10 | .10 | .10 | .10 | .10 | .10 |
| Graduate Assistants (other staff) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| General Expense (excluding computer use) | | | | | | | | |
| Equipment | | | | | | | | |
| Library Resources | | | | | | | | |
| Space Needs (amount & cost of new space and/or remodeled space) | | | | | | | | |
| Computer use – UNIX System Administrator | | | | | | .01 | .01 | .01 |
| Other Resources (explain) – Foreman Time | .01 | .01 | .01 | .01 | .01 | .01 | .01 | .01 |
| TOTAL | .06 | .06 | .11 | .11 | .11 | .12 | .12 | .12 |

**6. Outline the increases in expenditures that resulted from the adoption of this program, as well as estimate the increases, which will occur over the next three years.**

| | Actual | | | | Estimated | | | |
|---|---|---|---|---|---|---|---|---|
| | Year One | Year Two | Year Three | Year Four | Current Year | Next Year | Sec Year | Third Year |
| | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 |
| Faculty | $3,740 | $3,855 | $6,290 | $6,480 | $6,560 | $6,725 | $6,890 | $7,060 |
| Graduate Assistants (other staff) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| General Expense (excluding computer use) | $200 | $200 | $200 | $200 | $200 | $200 | $300 | $300 |
| Equipment UNIX WORKSTATION | 0 | 0 | 0 | 0 | 0 | $2,500 | 0 | 0 |
| Library Resources | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Space Needs (amount & cost of new space and/or remodeled space) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Computer use – | 0 | 0 | 0 | 0 | 0 | $678 | $700 | $720 |
| Other Resources (explain) | $307 | $334 | $356 | $379 | $405 | $417 | $430 | $443 |
| **TOTAL** | **$4,247** | **$4,389** | **$6,846** | **$7,059** | **$7,165** | **$10,520** | **$8,320** | **$8,523** |

These numbers represent a reallocation of the faculty and staff time that is associated with managing the degree. These assets, which are likely little more than what would otherwise be devoted to these students if they were enrolled in any of our other degree programs, were not accounted for in the original proposal for the degree. The funds allocated for the workstation are intended to strengthen the computer science track within the program.